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The effect of nurse-led educational counseling on anxiety and surgical decision-making in patients recommended for CABG after coronary angiography

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Abstract

This study aimed to determine the effect of nurses' educational patient counseling on anxiety levels and surgical decision-making in patients who were recommended for coronary artery bypass grafting (CABG) after coronary angiography (CA). A quasi-experimental design was conducted in the Intensive Care Unit of Kahramanmaraş Sütçü İmam University Health Practice and Research Hospital among patients who underwent CA and were recommended for CABG surgery. A total of 80 patients were included in the study, comprising 40 patients in the control group (CG) and 40 patients in the experimental group (EG). The researcher provided structured education about CABG surgery to patients in the EG, while patients in the CG continued to receive routine clinical care. Data were collected using the Patient Identification Form and the State-Trait Anxiety Inventory (STAI). The groups were similar in terms of descriptive characteristics, except for age ($p>0.05$). While 77.5% of patients in the CG and 100% of patients in the EG knew CA, 70.0% of patients in the EG and only 3.2% of patients in the CG reported receiving information solely from nurses. Regarding CABG surgery, 100.0% of patients in the EG and 30.0% of patients in the CG reported knowing the procedure. Additionally, 72.5% of patients in the EG and 8.3% of patients in the CG stated that they received information exclusively from nurses ($p<0.05$). Furthermore, 70.0% of patients in the EG and 10.0% of patients in the CG reported that they found the information provided to be sufficient ($p <0.05$). After CA, 62.5% of patients in the EG and 47.5% of patients in the CG accepted CABG surgery. Among those who accepted CABG surgery, 68.0% of patients in the EG and 57.9% of patients in the CG stated that the information they received influenced their decision ($p>0.05$). According to STAI-I scores, moderate state anxiety was observed in 62.5% of patients in the EG and 57.5% of patients in the CG ($p<0.05$). In conclusion, providing education about CABG surgery to patients in the experimental group who were recommended for CABG after coronary angiography positively influenced patients' surgical decision-making and anxiety levels.

Keywords: Coronary artery bypass grafting, nursing roles, anxiety, coronary angiography, surgical decision-making, patient counseling

Introduction

Coronary angiography (CA) is the most effective invasive diagnostic method used to visualize the coronary arteries, identify stenotic lesions, and guide subsequent medical or surgical treatment decisions. Coronary artery bypass grafting (CABG) is commonly recommended for patients who do not respond adequately to medical treatment following coronary angiography [1,2]. Despite significant advances in healthcare that have improved the success rates of CABG surgery, patients often experience a range of physical, psychological, and social challenges during the preoperative and postoperative periods.

Patients who are advised to undergo CABG frequently report fear and anxiety related to the procedure. Some patients may hesitate to accept the recommended surgery, request postponement of the operation, or seek alternative treatment options [3]. These emotional responses can negatively affect both surgical decision-making and clinical outcomes.

Nursing practice encompasses several essential roles, including caregiving, education, research, management, decision-making, and patient advocacy [4]. However, other important roles—such as communication, coordination, rehabilitation, autonomy, responsibility, and counseling—are often underutilized in

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clinical practice [5]. In the care of patients undergoing CABG, the primary goals across the preoperative, intraoperative, and postoperative phases include preventing complications, providing adequate and accurate information to reduce anxiety, and preparing patients for discharge. Nurses play a critical counseling role in alleviating surgical anxiety, supporting patients and their families, establishing care goals, facilitating acceptance of the treatment process, and promoting readiness for discharge [6].

Effective anxiety management begins with accurate assessment. Nurses can assist patients in identifying and managing anxiety through cognitive and behavioral approaches, delivering clear and concise information, and adopting a holistic, patient-centered care model rather than a task-oriented approach. Encouraging patients to recognize and express their surgical anxiety is an essential component of this process. Common sources of anxiety include the nature of the surgical procedure, anesthesia-related concerns, uncertainty about prognosis, separation from family, fear of unfamiliar environments, loss of control, disruption of body integrity, dependency, concerns about postoperative pain and discomfort, and fear of death. These factors may significantly influence patients' surgical decision-making. Therefore, nurses must thoroughly assess the underlying causes of anxiety and address them through individualized education and counseling using a holistic approach [7,8].

Previous studies have demonstrated that effective preoperative counseling promotes positive surgical decision-making, reduces preoperative anxiety and postoperative pain perception, supports faster stabilization of vital signs, accelerates recovery, facilitates early discharge, and ultimately reduces healthcare costs. For these reasons, the counseling role of nurses should be prioritized during the preoperative period [9].

This study emphasizes the counseling role of nurses working in coronary angiography units and aims to provide scientific evidence on how nurse-led educational counseling can reduce patient anxiety and support informed and appropriate surgical decision-making.

Material and Methods

Study Design and Sample

This quasi-experimental study was conducted to evaluate the impact of the nurse's educational patient counseling role on anxiety levels and surgical decision-making in patients who underwent coronary angiography and were subsequently recommended for coronary artery bypass grafting (CABG). The study was carried out in the Coronary Intensive Care Unit of Kahramanmaraş Sütçü İmam University Health Practice and Research Hospital.

Data for the control group (CG) were collected between January and May 2016, while data for the experimental group (EG) were collected between November 2016 and April 2017 at the same institution.

Sample Size Calculation

The sample size of the study was calculated using the G*Power 3.1.9.7 software. An independent samples t-test was planned to compare anxiety levels between the control group (CG) and the experimental group (EG). Cohen's d was used as the standardized effect size measure. Based on a two-tailed hypothesis with an effect size of 0.95, a significance level (α) of 0.05, and a statistical power of 80%, the minimum required sample size was calculated as 35 patients per group. To account for potential data loss, the sample size was increased by 10%, resulting in a final target sample size of 40 patients per group. During the study period, a total of 520 patients underwent coronary angiography. Of these patients, 415 received medical treatment or percutaneous coronary intervention, 10 underwent emergency surgery, and 95 were scheduled for elective CABG. Fifteen patients who met the inclusion criteria declined to participate and were therefore excluded. The study was completed with a total of 80 patients, including 40 patients in the CG and 40 patients in the EG (Figure 1).

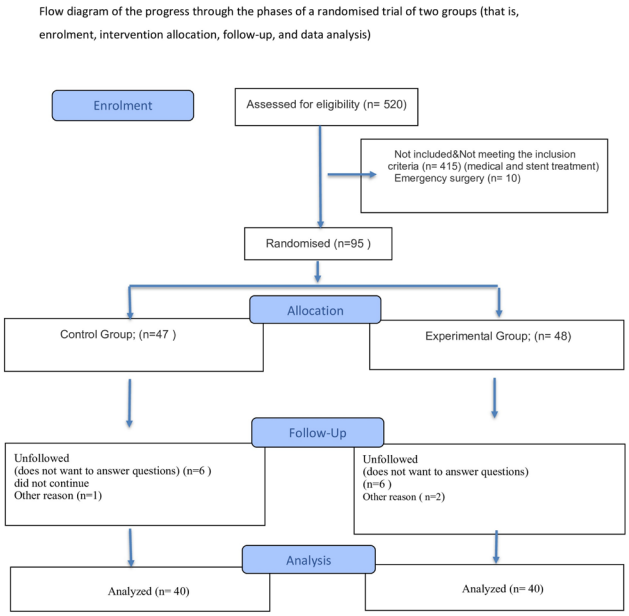

Figure 1. CONSORT 2025 flow diagram

Sampling Criteria

Patients were eligible for inclusion if they:

were 18 years of age or older, underwent coronary angiography and were recommended for planned CABG surgery, had no hearing or comprehension impairments, had no diagnosed psychiatric disorder, were not using psychotropic medication, and voluntarily agreed to participate in the study.

Hypotheses and Variables of the Study

Hypotheses

H1: In patients recommended for CABG surgery, the nurse's educational patient counseling role significantly affects patients'

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anxiety levels and surgical decision-making.

H2: In patients recommended for CABG surgery, the nurse's educational patient counseling role does not affect patients' anxiety levels or surgical decision-making.

Variables

The dependent variables of the study were patients' anxiety levels, measured using the State-Trait Anxiety Inventory (STAI) after the decision regarding CABG surgery. The independent variables included the nurse-led educational and counseling interventions related to CABG surgery, as well as the demographic and clinical variables collected through the Patient Identification Form.

Research Data Collection

Data Collection Tools

Two instruments were used to collect the study data. The first was the Patient Identification Form, which was developed by the researcher based on a review of the relevant literature [3,6,9,12,14,27–30]. This form included questions related to patients' sociodemographic characteristics and clinical information. The second instrument was the State–Trait Anxiety Inventory (STAI), originally developed by Spielberger et al. and subsequently adapted and validated for use in the Turkish population by Öner et al. [10].

Patient Identification Form

The Patient Identification Form was developed by the researcher following a comprehensive review of the relevant literature [3,6,9,12,14,27–30]. The form consists of 35 items organized into three sections: sociodemographic data, disease-related data, and surgical (CABG)-related data.

Section I: Sociodemographic Data

This section includes items related to patients' age, sex, educational level, marital status, caregiver status, number of dependents, occupation, current employment status, health insurance coverage, place of residence, and lifestyle habits.

Section II: Disease-Related Data

This section collects information regarding medical diagnosis, patients' level of knowledge about their condition, physician-diagnosed chronic diseases, current medications, previous surgical history, and coronary angiography findings.

Section III: Surgical (CABG)-Related Data

This section assesses patients' knowledge of the recommended CABG procedure and explores factors that may influence their decision to undergo surgery.

State–Trait Anxiety Inventory (STAI)

The State–Trait Anxiety Inventory (STAI) was developed by Spielberger and Gorsuch in 1964 to assess state and trait anxiety levels in both clinical and non-clinical populations. The validity and reliability of the Turkish version of the STAI were established by Öner et al. [10].

The STAI consists of two separate subscales, each containing 20 items, designed to measure state anxiety (temporary emotional condition) and trait anxiety (general tendency to experience anxiety). Responses to the state anxiety scale are rated on a four-point Likert scale: "Not at all," "Somewhat," "Moderately so," and "Very much so," reflecting the intensity of current feelings. Responses to the trait anxiety scale are rated as "Almost never," "Sometimes," "Often," and "Almost always," reflecting the frequency of anxiety-related feelings and behaviors. In the state anxiety subscale, 10 items are reverse scored (items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20). In the trait anxiety subscale, 8 items are reverse scored (items 21, 26, 27, 30, 33, 36, and 39). According to the scoring system adapted by Öner, total STAI scores are interpreted as follows: 0–19 points indicate no anxiety, 20–39 points indicate mild anxiety, 40–59 points indicate moderate anxiety, 60–79 points indicate severe anxiety, and 80 points and above indicate panic-level anxiety.

Nurse-Led Educational Counseling for CABG Surgery

Patients in the experimental group (EG) who met the sampling criteria received individual, face-to-face educational counseling provided by the researcher. Each counseling session lasted approximately 15–20 minutes. Prior to the counseling intervention, patients were assessed for catheter insertion site pressure, vital signs, pain levels, and other factors that could influence their general condition and anxiety. The educational counseling was delivered 24 hours after coronary angiography, at a time when patients were clinically stable, cognitively alert, and had been informed about the recommended surgical procedure and the need for CABG. The counseling intervention covered key aspects of coronary artery disease, CABG surgery, and perioperative nursing care, as well as discharge planning and rehabilitation. The content of the Educational Counseling Program for CABG Surgery was developed by the researcher based on a comprehensive review of the relevant literature.

The educational topics included:

- Treatment methods for coronary artery disease
- Coronary artery bypass graft surgery
- Indications for coronary artery bypass graft surgery
- Nursing care of patients undergoing coronary artery bypass graft surgery
- Preoperative preparation and nursing care
- Intraoperative nursing care
- Postoperative nursing care
- Postoperative care following coronary artery bypass graft surgery, including discharge and rehabilitation

Implementation of the Study

Control Group (CG): The implementation process for patients in the control group consisted of two phases; Phase I: Identification

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of eligible patients who met the sampling criteria and their inclusion in the study. Phase II: Data collection from patients who agreed to participate. During face-to-face interviews, the Patient Identification Form and the State–Trait Anxiety Inventory (STAI) were administered. Patients in the control group received routine clinical care without any additional educational or counseling intervention.

Experimental Group (EG): Data for the experimental group were collected in the Coronary Intensive Care Unit following the delivery of the Bypass Graft Surgery Educational Counseling Program, which was developed by the researcher based on a review of the relevant literature. The implementation process for the experimental group consisted of three phases; Phase I: Identification of eligible patients who met the sampling criteria and their inclusion in the study. Phase II: Delivery of the Bypass Graft Surgery Educational Counseling. The counseling intervention included information on disease diagnosis, treatment options, perioperative nursing care, and discharge planning and rehabilitation. Phase III: Data collection from patients who agreed to participate. Following the counseling intervention, face-to-face interviews were conducted, during which the Patient Identification Form and the STAI were administered.

The Educational Counseling Program for Coronary Artery Bypass Graft Surgery included the following topics:Treatment methods for coronary artery disease, Indications for CABG surgery Nursing care during the preoperative, intraoperative, and postoperative periods, Post-discharge education and rehabilitation for patients undergoing CABG surgery.

Ethical Considerations

Ethical approval for the study was obtained from the Hasan Kalyoncu University School of Health Sciences Ethics Committee (approval date: November 9, 2016; decision number: 2016/13). In addition, written institutional permission was secured from the Chief Physician of Kahramanmaraş Sütçü İmam University Health Practice and Research Hospital prior to the initiation of the study. All participants were informed about the purpose and procedures of the study, and written informed consent was obtained from each participant before data collection. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Result

The sociodemographic characteristics of the patients and the statistical comparisons between the control group (CG) and the experimental group (EG) are presented in Table 1. The mean age of patients in the CG was 63.05±8.86 years, while the mean age of patients in the EG was 68.25±8.17 years. The proportion of patients aged 60 years and older was higher in the EG, and a statistically significant difference was observed between the groups in terms of mean age and age distribution ($p<0.05$). Male patients constituted 75.0% of the CG and 50.0% of the EG, and the difference in gender distribution between the groups was statistically significant ($p<0.05$). No statistically significant differences were found between the CG and EG with respect to the other sociodemographic variables presented in Table 1 ($p>0.05$).

Table 1. Socio-demographic characteristics of patients and statistical comparison between control and experimental groups (N=80)

Variable	Control Group (n=40) Mean±SD*Min–Max	Experimental Group (n=40) Mean±SD*Min–Max	Test	p
Age (years)	63.05±8.8652–85	68.25±8.1747–79	−2.727**	0.008
Body Mass Index (kg/m²)	30.55±3.5025.70–38.60	29.67±2.5125.50–35.40	1.284**	0.203
	n (%)	**n (%)**		
Age Groups (years)				
52–59	21 (52.5)	9 (22.5)	7.680***	0.006
≥60	19 (47.5)	31 (77.5)		
Body Mass Index Categories				
26–30 (Overweight)	24 (60.0)	25 (62.5)	0.053***	0.818
31–40 (Obese)	16 (40.0)	15 (37.5)		
Gender				
Male	30 (75.0)	20 (50.0)	5.333***	0.021
Female	10 (25.0)	20 (50.0)		

ss*: Standard Deviation, **:T test in independent groups, ***:Chi-Square test

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The distribution of disease-related characteristics of the CG and EG patients is shown in Table 2. The majority of patients in both groups had at least one chronic disease (CG: 92.5%, EG: 90.0%), with cardiovascular disease being the most common condition (CG: 85.0%, EG: 72.5%). Most patients reported regular medication use (CG: 90.0%, EG: 92.5%). A previous history of surgery was reported by 80.0% of CG patients and 65.0% of EG patients, and most participants had a relative who had previously undergone CABG surgery (CG: 75.0%, EG: 67.5%). No statistically significant differences were observed between the groups regarding disease-related characteristics ($p>0.05$).

All patients included in the study were admitted to the Cardiology Intensive Care Unit with chest pain or angina, a diagnosis or suspicion of myocardial infarction, and were recommended for planned CABG surgery based on coronary angiography findings. All patients underwent angiography due to coronary artery disease. Within the scope of the study, structured information regarding coronary angiography was provided to EG patients by the researcher, whereas CG patients received routine clinical care without additional information.

Table 2. Comparison of disease-related characteristics between control and experimental groups (N=80)

Variable	Control Group (n=40) n (%)	Experimental Group (n=40) n (%)	Test	p
Presence of a Chronic Disease				
Yes	37 (92.5)	36 (90.0)	0.157*	0.692
No	3 (7.5)	4 (10.0)		
Type of Chronic Disease†				
Cardiovascular disease (e.g., heart failure, hypertension)	34 (85.0)	29 (72.5)	1.867*	0.172
Diabetes mellitus	27 (67.5)	22 (55.0)	1.317*	0.251
Respiratory system disease	17 (42.5)	18 (45.0)	0.051*	0.822
Other‡	4 (10.0)	14 (35.0)	7.168*	0.007
Continuous Medication Use				
Yes	36 (90.0)	37 (92.5)	0.157*	0.692
No	4 (10.0)	3 (7.5)		
Previous Surgical Intervention				
Yes	32 (80.0)	26 (65.0)	2.257*	0.133
No	8 (20.0)	14 (35.0)		
Relative with History of CABG Surgery				
Yes	30 (75.0)	27 (67.5)	2.466*	0.291
No	10 (25.0)	13 (32.5)		

*: Chi-square test, Other**: Includes cancer, digestive system, musculoskeletal system, endocrine system diseases, includes respiratory system diseases (chronic bronchitis, COPD, emphysema, etc.)

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Most CG patients and all EG patients reported having knowledge about coronary angiography (CG: 60.0%, EG: 100.0%). Regarding the source of this information, 70.0% of EG patients and 4.2% of CG patients stated that they received information solely from nurses. When patients were asked whether they found the information sufficient, 12.5% of CG patients reported that it was completely sufficient, compared with 77.5% of EG patients. The differences between the groups regarding knowledge, information sources, and perceived adequacy of information about coronary angiography were statistically significant ($p<0.05$) (Table 3). Information status regarding CABG surgery after coronary angiography is presented in Table 4. All EG patients (100.0%) reported receiving information about CABG surgery, whereas this rate was 30.0% in the CG. Information provided exclusively by nurses was reported by 72.5% of EG patients and 8.3% of CG patients. Only 10.0% of CG patients and 70.0% of EG patients stated that the information they received was sufficient.

Regarding specific surgical information, 67.5% of CG patients and 90.0% of EG patients reported receiving information about the surgical site. Information about the surgical team was reported by 55.0% of CG patients and 60.0% of EG patients. General information about the surgical technique was reported by 7.5% of CG patients and 75.0% of EG patients. Information about the risks of CABG surgery was received by 10.0% of CG patients and 90.0% of EG patients. The differences between the groups regarding receipt of CABG-related information were statistically significant ($p<0.05$) (Table 4).

According to Table 5, 47.5% of CG patients and 62.5% of EG patients accepted the recommended CABG surgery following coronary angiography. Additionally, 35.0% of CG patients and 20.0% of EG patients were undecided about undergoing surgery. The difference between the groups in terms of acceptance of CABG surgery was not statistically significant ($p>0.05$). Among patients who accepted CABG surgery (CG: n=19; EG: n=25), 57.9% of CG patients and 68.0% of EG patients reported that the information they received influenced their decision to accept surgery. This difference was not statistically significant ($p>0.05$) (Table 5).

Table 3. Knowledge and information sources about coronary angiography in control and experimental groups (N=80)

Variable	Control Group (n=40) n (%)	Experimental Group (n=40) n (%)	Test	p
Received information about coronary angiography				
Yes	24 (60.0)	40 (100.0)	20.000*	<0.001
No	16 (40.0)	0 (0.0)		
Source of information				
Nurse only	1 (4.2)	28 (70.0)	36.608*	<0.001
Physician only	9 (37.5)	0 (0.0)		
Nurse and physician	10 (41.7)	12 (30.0)		
Other**	4 (16.7)	0 (0.0)		
Perceived adequacy of information received				
Completely sufficient	3 (12.5)	31 (77.5)	29.005*	<0.001
Partially sufficient	8 (33.3)	7 (17.5)		
Insufficient	13 (54.2)	2 (5.0)		

*: Chi-square test, Other **: Virtual and visual media, relatives and contact persons

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Table 4. Information and information sources about CABG surgery after coronary angiography in control and experimental groups (N=80)

Variable	Control Group (n=40) n (%)	Experimental Group (n=40) n (%)	Test	p
Received information about CABG surgery				
Yes* **	12 (30.0)	40 (100.0)	43.077*	<0.001
No	28 (70.0)	0 (0.0)		
Source of information about CABG surgery†				
Nurse only	1 (8.3)	29 (72.5)	—	—
Physician only	3 (25.0)	0 (0.0)		
Nurse and physician	6 (50.0)	11 (27.5)		
Other**	2 (16.7)	0 (0.0)		
Perceived adequacy of information received				
Completely sufficient	4 (10.0)	28 (70.0)	30.522*	<0.001
Partially sufficient	16 (40.0)	7 (17.5)		
Insufficient	20 (50.0)	5 (12.5)		
Information received about surgical site				
Yes	27 (67.5)	36 (90.0)	6.457*	0.040
Partially	7 (17.5)	3 (7.5)		
No	6 (15.0)	1 (2.5)		
Information about surgical team				
Yes	24 (60.0)	22 (55.0)	1.620*	0.044
Partially	3 (7.5)	1 (2.5)		
No	13 (32.5)	17 (47.5)		
General information about surgical technique				
Yes	3 (7.5)	30 (75.0)	37.602*	<0.001
Partially	15 (37.5)	4 (10.0)		
No	22 (55.0)	6 (15.0)		
Information about surgical risks				
Yes	4 (10.0)	36 (90.0)	51.267*	<0.001
Partially	22 (55.0)	2 (5.0)		
No	14 (35.0)	2 (5.0)		

*: Chi-square test **: Other sources: virtual and visual media, relatives, and contact persons ***: Percentages are calculated based on the number of patients who received information about the surgery (CG: n=12; EG: n=40)

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This section presents the distribution and comparison of State Anxiety (STAI-I) and Trait Anxiety (STAI-II) scores among patients following coronary angiography. Descriptive statistics and between-group comparisons are summarized in Table 6. The mean STAI-I score of patients in the control group (CG) was 57.27±9.16, which was higher than that of patients in the experimental group (EG) (53.50±9.70); however, the difference between the groups was not statistically significant (p>0.05). Similarly, the mean STAI-II score was 51.94±6.14 in the CG and 50.67±6.90 in the EG, with no statistically significant difference observed between the groups (p>0.05). When STAI-I score categories were examined, no CG patients were classified as having mild anxiety, whereas 10.0% of EG patients fell into this category. Moderate anxiety was observed in 57.5% of CG patients and 62.5% of EG patients, while severe anxiety was identified in 42.5% of CG patients and 27.5% of EG patients. The distribution of STAI-I anxiety categories differed significantly between the CG and EG (p<0.05). Regarding STAI-II score categories, 5.0% of CG patients and 17.5% of EG patients were classified as having mild anxiety. Moderate anxiety was observed in 82.5% of CG patients and 72.5% of EG patients. Comparison of STAI-II anxiety category distributions revealed no statistically significant difference between the groups (p>0.05) (Table 6).

Table 5. Acceptance of Recommended CABG Surgery After Coronary Angiography and the Impact of Patient Education (N=80)

Variable	Control Group (n=40) n (%)	Experimental Group (n=40) n (%)	Test	p
Acceptance of recommended CABG surgery				
Accepted	19 (47.5)	25 (62.5)	2.455*	0.293
Undecided	14 (35.0)	8 (20.0)		
Rejected	7 (17.5)	7 (17.5)		
Perceived effectiveness of education on acceptance decision†				
Not effective	8 (42.1)	8 (32.0)	0.913*	0.633
Effective	11 (57.9)	17 (68.0)		

* Chi-square test. ** Percentages are calculated based on the number of patients who accepted the recommended CABG surgery (CG: n=19; EG: n=25)

Table 6. Comparison of STAI-I and STAI-II anxiety scores in control and experimental groups (N=80)

Variable	Control Group (n=40) Mean±SD	Experimental Group (n=40) Mean±SD	Test	p
STAI-I score (State anxiety)	57.27±9.16	53.50±9.70	1.788*	0.078
STAI-II score (Trait anxiety)	51.94±6.14	50.67±6.90	0.865*	0.390
STAI-I (State Anxiety) Score Categories				
	Control Group n (%)	**Experimental Group n (%)**	**Test**	**p**
Mild anxiety (20–39)	0 (0.0)	4 (10.0)	6.924**	0.031
Moderate anxiety (40–59)	23 (57.5)	25 (62.5)		
Severe anxiety (60–79)	17 (42.5)	11 (27.5)		
STAI-II (Trait Anxiety) Score Categories				
	Control Group n (%)	**Experimental Group n (%)**	**Test**	**p**
No anxiety (0–19)	0 (0.0)	0 (0.0)	3.312**	0.191
Mild anxiety (20–39)	2 (5.0)	7 (17.5)		
Moderate anxiety (40–59)	33 (82.5)	29 (72.5)		
Severe anxiety (60–79)	5 (12.5)	4 (10.0)		
Panic (≥80)	0 (0.0)	0 (0.0)		

*: Independent groups t test **: Chi-square test

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Discussion

In the present study, the control group (CG) and experimental group (EG) were found to be homogeneous with respect to most sociodemographic characteristics, with the exception of mean age (Table 1). This relative homogeneity between groups reduces potential bias and strengthens the internal validity of the study. Coronary artery bypass grafting (CABG) is a widely used surgical treatment modality for patients with coronary artery disease (CAD) and myocardial infarction (MI) following coronary angiography [11]. The finding that all patients in the present study were diagnosed with MI and recommended for CABG is consistent with current clinical practice and the existing literature.

A substantial proportion of patients in both groups reported a family history of CABG surgery (CG: 75.0%; EG: 67.5%) (Table 2). Similarly, Cebeci [3] reported that 56.1% of CG patients and 46.2% of EG patients had relatives with CAD. Family history of CAD and CABG surgery has been identified as an important risk factor for CAD and MI [12], and the findings of the present study are consistent with previous reports.

In this study, 80.0% of CG patients and 65.0% of EG patients had previously undergone a surgical procedure (Table 2). Previous studies have emphasized that prior surgical experience may influence patients' anxiety levels related to subsequent surgical interventions [13,14]. Therefore, previous surgical experience may play a role in shaping patients' anxiety and, consequently, their willingness to accept CABG surgery.

Regarding knowledge of coronary angiography, 60.0% of CG patients and all EG patients (100.0%) reported being informed (Table 3). This finding is consistent with the study by Vizeli [15], in which 74.0% of patients were knowledgeable about coronary angiography. In the present study, a markedly higher proportion of EG patients reported receiving information solely from nurses and perceived this information as sufficient, compared with CG patients. This finding suggests that the structured, nurse-led educational intervention implemented in the EG was effective and meaningful.

Knowledge related to CABG surgery was reported by 30.0% of CG patients and all EG patients (100.0%) (Table 4). Similar rates of information provision have been reported in previous studies; Özcan [16] found that 32.0% of patients received information about open-heart surgery, and Yıldız [17] reported a rate of 25.0%. These findings are comparable to the CG results in the present study. The fact that all EG patients received information about CABG highlights the effectiveness of the planned educational intervention. Heavy nursing workloads, a predominant focus on clinical care, and limited awareness of the nursing education role may explain why CG patients received less information from nurses. Given the high-risk nature of cardiac surgery, comprehensive patient education regarding diagnosis, treatment, and potential complications is essential. The finding that most EG patients received information exclusively from nurses underscores the critical impact of nurse-led patient education.

Acceptance of CABG surgery was higher among EG patients compared with CG patients (EG: 62.5%; CG: 47.5%), while the proportion of undecided patients was lower in the EG (EG: 20.0%; CG: 35.0%). Among patients who accepted surgery, a greater proportion of EG patients reported that the information they received influenced their decision (Table 5). These findings suggest that nurse-led education enhanced patients' understanding and supported more informed surgical decision-making.

Patients may refuse or delay surgery for various reasons. As reported by Budak [18], preoperative education addressing patients' fears, treatment options, pain management, nutrition, wound care, physical activity, breathing exercises, hygiene, and medication use may significantly influence surgical acceptance. Surgical nurses play a key role in delivering education on these topics and supporting patients throughout the decision-making process.

The State–Trait Anxiety Inventory (STAI) is widely regarded as the gold standard for assessing preoperative anxiety, particularly in surgical settings [19]. In the present study, STAI-I was used to assess surgery-related anxiety, and STAI-II was used to assess trait anxiety. The mean STAI-I score was higher in CG patients than in EG patients, although the difference was not statistically significant, and both groups exhibited moderate levels of state anxiety (Table 6). Similar findings have been reported in previous studies. Heikkilä et al. [20] reported high anxiety levels among patients scheduled for CABG surgery, and other studies have demonstrated elevated STAI-I scores in patients awaiting cardiac surgery [21,26].

Trait anxiety levels (STAI-II) were also similar between the CG and EG, indicating moderate anxiety levels in both groups. Comparable results have been reported by Cserép et al. [22] and Yıldız [24]. Although differences in mean anxiety scores were not statistically significant, the lower anxiety levels observed in the EG suggest that structured education may contribute to anxiety reduction.

Consistent with previous CABG-related studies, the present findings indicate that nurse-led education increases patient knowledge and may contribute to reductions in anxiety, thereby positively influencing surgical decision-making processes [23,25]. Education has been shown to improve disease perception and reduce uncertainty among patients undergoing CABG surgery. In conclusion, the planned educational counseling provided by nurses in this study enhanced patient knowledge, reduced anxiety related to surgery, and supported more informed evaluation of the recommended surgical treatment.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, due to its quasi-experimental design, it was not possible to fully standardize patient-related factors, the educational intervention, or the data collection

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procedures across all participants. Second, the majority of the study sample consisted of elderly patients, which may have affected information recall and response accuracy due to age-related forgetfulness. Additionally, the study was conducted with a relatively small sample drawn from a single center—the Coronary Intensive Care Unit of Kahramanmaraş Sütçü İmam University Health Application and Research Hospital. Therefore, the findings cannot be generalized to all patients undergoing coronary angiography or those recommended for CABG surgery. During the study, it was observed that patients' relatives had a noticeable influence on patients' perceptions and decision-making processes. However, family members were not included in the study design. Future studies may benefit from incorporating patients' relatives into educational interventions, as providing CABG-related education to family members could further influence patient outcomes and enhance shared decision-making.

Conclusion

This quasi-experimental study was conducted to examine the effect of the nurse's patient counseling role on anxiety levels and surgical decision-making in patients who underwent coronary angiography and were recommended coronary artery bypass grafting (CABG) in the coronary intensive care unit.

The findings demonstrated that patient education and counseling provided by nurses had a positive impact on patients' knowledge, anxiety levels, and acceptance of CABG surgery. While only 30% of patients in the control group (CG) had knowledge about CABG surgery, all patients in the experimental group (EG) (100%) were informed. A substantial proportion of EG patients (72.5%) reported receiving information solely from nurses, and 70% considered this information sufficient, compared with only 8.3% and 10%, respectively, in the CG.

Patients in the EG showed a higher acceptance rate of CABG surgery than those in the CG. The proportion of patients who accepted surgery increased from 47.5% in the CG to 62.5% in the EG, while the rate of indecision decreased from 35.0% to 20.0%. The rate of refusal remained unchanged in both groups. These findings indicate that structured nurse-led counseling supports patients in making more informed surgical decisions.

Regarding anxiety levels, although the mean state anxiety (STAI-I) scores were comparable between groups, the proportion of patients experiencing severe anxiety was higher in the CG (42%) than in the EG (27.5%). Trait anxiety (STAI-II) scores were similar in both groups and indicated moderate anxiety levels. These results suggest that nurse-led counseling may contribute to reducing severe anxiety related to the surgical process, even if overall mean anxiety scores do not differ significantly.

In conclusion, the counseling and education provided by nurses significantly increased patients' knowledge about coronary angiography and CABG surgery, improved acceptance of the recommended surgical intervention, and contributed to lower anxiety levels. Based on these findings, it is recommended that clinical nurses routinely deliver structured, planned education and counseling services to patients and their families who are candidates for CABG surgery to support informed decision-making and enhance psychological well-being.

Conflict of Interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
The authors declare that they have received no financial support for the study.

Ethical Approval
This study was approved by the Ethics Committee of Hasan Kalyoncu University School of Health Sciences (approval date: November 9, 2016; decision number: 2016/13). Written institutional permission was also obtained from the Chief Physician of Kahramanmaraş Sütçü İmam University Health Application and Research Hospital.

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